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13 MARCH 58

Encl. #3 to DPS-5946
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TO:

FROM:

SUBJECT: U-2 IRAN

The following is data for inspection and repair of U-2 aircraft to be performed at the conclusion of 500 to 1000 hours flight time. This data is to be the basis for inspection records and charts for use during the IRAN operation.

The data included here covers the following items -

ITEM I - Preliminary inspection check list which will be expanded into the inspection and production records necessary for an IRAN to be performed.

II - Complete electrical checkout on finished article.

III - Functional checks to be used on hydraulic components.

IV - List of parts to be replaced and hours at which they are normally replaced.

V - Estimated time and schedule.

ITEM I

I. Run inventory or form DD-780 check on ship as soon as it is received.

1. Note any shortages.

2. Note any pilot squawks on flight.

II. Run engine for preservation during lay-up. Remove aft fuselage and engine.

1. Send attach bolts in for magnaflux inspection.

2. Check attach fittings for hole elongation, visible cracks, etc.

III. Remove Empennage.

1. Check attach bolts (fin, stab, elevator system & rudder) to magnaflux.

2. Check attach fittings for hole elongation and visible cracks.

ITEM I (contd.)

III. Remove Empennage (contd.)

3. Check skin for scratches, cracks, pulled rivets, buckles, etc.

4. Check control cables for broken strands, pulleys for bad bearings or cracked flanges, brackets for cracks or pulled rivets.

5. Check drag chute system to latest change.

6. Check rudder, elevator and tabs and control systems.

IV. Aft Fuselage.

1. Remove landing gear.

a. Check play in bearings at trunnion.

b. Check chrome plate on piston.

c. Check grease and wheel bearings.

d. Replace "O" rings and packings.

e. Bring up to latest change.

2. Check fuselage structure to latest change.

3. Check outside skin for scratches, pulled rivets and cracks.

4. Check control system, pulleys, brackets, control rods, electrical harness.

5. Repaint inside of aft & forward fuselage.

V. Forward Fuselage.

1. Remove wings; includes, removing flaps.

a. Route attach bolts to magnaflux inspection.

2. Remove hydro and fuel control valves.

a. Route to plant for "O" ring replacement, and functional check.

3. Remove sump tanks.

a. Replace float valves at 600 hours.

b. Check for worn places.

c. Pressure check for leaks.

ITEM I (contd.)

V. Forward Fuselage (contd.)

4. Visual check of structure in engine section. Watch wing fittings, and skin in area where ground handling dolly attaches. Watch flush rivets in same area.

5. Visual check of outside skin over entire fwd. fuselage.

a. Check inside of engine air duct skins.

6. Remove L/G and actuating system.

a. Check chrome on piston.

b. Replace all "O" rings.

c. Bring up to latest change.

d. Check for leaks.

e. Check wheels, tires, brakes, and wheel bearings.

7. Remove dive flap actuating cylinders.

a. Check chrome piston.

b. Check "O" rings.

c. Bring up to latest change.

8. Replace all rubber hose connections.

VI. Cockpit.

1. Remove canopy.

a. Check glass and frame condition.

2. Check canopy release system.

a. Work to latest change.

3. Check windshield for condition.

4. Remove seat.

a. Check belt and harness for condition.

b. Proof test of above and redate both.

c. Check seat condition.

d. Check tracks and mounting fittings.

ITEM I (contd.)

VI. Cockpit (contd.)

5. Remove all flight instruments and send in for check.

6. Remove all cockpit and equip. bay pressurization valves, controls, check and replace.

a. Replace all doubtful rubber seals and "O" rings.

7. Visual check of all wire harness condition and security.

8. Check control stick for play and condition of control grip, switches, etc.

a. Replace "O" ring in C 175-5 piston.

9. Check engine control system from throttle handle to engine.

10. Check rudder pedals and rudder control system cables, pulleys and brackets.

11. Check instrument lighting and light brackets.

12. Check oxygen regulators and equipment. Replace 24 hrs. oxygen leak check.

a. Replace "O" rings.

13. Check fuel quantity system.

VII. Wings.

1. Remove ailerons.

a. Check aileron hings points and control system.

b. Check aileron for evidence of structural failures.

c. Check aileron tab actuator and control system - Check at 1000 hrs.

2. Check flap attach fittings and control system.

a. Check flap structure for evidence of structural failure.

3. Check wing surface for evidence of structural failure.

a. Check aileron and flap hinge points.

4. Pressure check wing to pick up any fuel leaks.

5. Check wire harnesses for proper inst., chaffing or other wear.

ITEM I (contd.)

VIII. Reassemble Aircraft.

1. Check-out primary and secondary controls.
2. Check-out complete electrical.
3. Check-out complete hydraulic.
4. Check-out complete pressurization.
5. Check-out engine for proper operation.
6. Acid etch outside of ship.
7. Repaint and re-stencil ship.

IX. Test Flight Aircraft at Edwards AFB

1. Run inventory or form DD-780 check on ship.
2. Swing compass.
3. Weight- Record correct weight status and bring book completely up to date.
4. Engine trim.
5. Aircraft trim.
6. Flight test.
7. Deliver to customer.
8. Sign-off on form DD-781-1. Similar to original delivery sign-off.

ITEM II

This is a complete electrical checkout on the article identical to that accomplished when first manufactured. This is listed in detail on an attached enclosure. This enclosure is presently in all Erection & Maintenance Manuals as appendix D.

ITEM III

This is a complete functional test procedure for all hydraulic and pneumatic equipment used in the U-2. All units, whether replaced or left in the article shall be checked to the appropriate functional test enclosed here. This enclosure is presently in all Erection & Maintenance Manuals as Appendix E.

ITEM IV

The following parts & units are to be replaced during the IRAN as the majority of them will have their time run out at that time. Those that still have time remaining will be replaced anyway so that the whole aircraft starts at zero time after IRAN.

ITEM	NORMAL REPLACEMENT TIME
Elevator tab actuators	800 Hrs.
Aileron trim tab actuators	1000 "
Dive brake actuator cyl.	1600 "
Dive brake selector valve	800 "
Inertia reel (seat)	1200 "
Brake master cylinder	1200 "
Landing gear selector valve	1200 "
Landing gear actuating cyl.	1600 "
Wing flap hydro motors	1000 "
Hydro accumulator	1000 "
Hydro motor, boost pump	600 "
Flex hose Hydro system	1000 "
or: date on hose totals	5 Yrs.
Fuel boost pump	500 "
Fuel level valves	600 "
Voltage regulator	600 "
Inverter	600 "
Reverse current relay	1000 "
Auto pilot components	1000 "
Instruments	1000 "
Engine	200 "
Ram air shut-off valve	1000 " or 1 Yr.
Refrigerator	100 " " 150 hrs.
Water separator	500 "
Refrigerator by-pass valve	750 "
Flow regulator & shut-off valve, engine bleed air	500 " " 1 Yr.
Water separator & de-icing system thermostat & valve	1000 " " 1 Yr.

ITEM	NORMAL REPLACEMENT TIME
Cabin pressure regulator	1000 Hrs. or 1 Yr.
Cabin safety valve (dump)	1000 " " 1 "
Equip Bay pressure regulator	1000 " " 1 "
Equip Bay safety valve (dump)	1000 " " 1 "
Fuel strainer (fuel Htr.)	50 "
Venturi (fuel press.)	50 "
Filter (fuel Press.)	50 "
Fuel quantity system check	600 "
Fire detectors (thermoswitches)	600 "
Hydro resevoir air filter	200 "
Seat Belt & Harness	1 Yr.
Oxygen Panel	500 "

ITEM V EXTIMATED TIME & SCHEDULE FOR U-2 IRAN OPERATION-

The present state of the U-2 aircraft now in service indicates that an IRAN probably should not have to be accomplished before 1000 hrs. flight time has been logged. But this value of 1000 hrs. should be investigated and substantiated by first doing same few IRAN's at 500 & 750 hrs.

It is proposed that the first two articles to reach 500 hrs. be returned to Edwards for IRAN to carefully check their condition at that time. If these two appear satisfactory at 500 hours, then the next two which reach 750 hours shall be checked in the same manner. Thereafter, if these first four articles were in satisfactory condition, the IRAN flight schedule shall be set at 1000 hrs. It will be apparent from the lower time inspections if the IRAN should be less than 1000 hrs.

During the period from 1 July'57 to 1 February'58 an average of 32.6 flight hours per month per aircraft has been accomplished. Presently the highest time is aircraft 56-6695 with 489 hours on it.

This means that the schedule for the 500, 750 and 1000 hr. IRAN's would be approximately as follows:

AIRCRAFT	Present HOURS	IRAN HOURS	IRAN STARTS
56-6695	489	500	April 1'58
56-6698	416	500	June 1'58
56-6697	398	750	Jan 1'59
56-6696	275	750	June 1'59
56-6706	252	1000	?

After 56-6706, two articles a month would be in for a 1000 hr. IRAN until finished, approximately 1 June'60.

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